Citation:

Di Castelnuovo A, Rotondo S, Iacoviello L, Donati MB, De Gaetano G. Meta-analysis of wine and beer consumption in relation to vascular risk. *Circulation.* 2002 Jun 18;105(24):2836-44.

PubMed ID: 12070110

Study Design:

Meta-analysis

Class:

M - Click here for explanation of classification scheme.

Research Design and Implementation Rating:

POSITIVE: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

This meta-analysis studied the relationship between wine or beer consumption and cardiovascular disease.

Inclusion Criteria:

Studies identified as evaluating the risk between alcohol consumption and vascular risk published through September 2001.

Exclusion Criteria:

One study was excluded because neither the confidence intervals nor precise probability values were reported.

Description of Study Protocol:

Recruitment

A PUBMED search together with an assessment of the references of published studies was conducted until September 2001 to identify studies. Publications reporting risks specific for wine and/or beer were selected. 30 studies were identified. Some were multiple reports from the same cohort. A total of 26 reports were identified for the meta-analysis.

Design: Meta-analysis

Blinding used (if applicable): not applicable

Intervention (if applicable): not applicable

Statistical Analysis

- Two separate meta-analysis were conducted: the first used the 23 studies reporting data for wine, and the second used the 22 studies reporting data for beer.
- Finally, the studies were divided into two groups.
- The first group included studies that considered only a category of risk (drinkers versus nondrinkers), and the second was formed by studies that reported "trend" analysis of risk ("dose-response" meta-analysis).
- In the drinkers versus nondrinkers meta-analysis, data were combined using the general variance-based method that requires information on the relative risks (RR) or odds ratios estimate and their 95% CI for each study.
- When no CIs were presented, they were calculated by transforming probability values.
- The 95% CIs were used to asses the variance and the relative weight of each study. Adjusted RR, when available was preferred.
- Publication bias was tested using funnel plot asymmetry.
- Results from subgroup analyses were reported with 99% CI to account for multiple comparisons.
- Data from studies reporting trend analysis were pooled with weighted, least-squares regression model.
- Study effect was modeled with indicator variables. this approach may be extended to fit a J-shaped trend, including linear and quadratic terms.
- Statistical analyses were performed using the SAS package (version 8.2 for Windows).
- Some studies had not taken the intake of different types of alcoholic beverages into account (type A), whereas others (type B) the bias of combined drinking of different alcoholic beverages in the same population was either formally excluded using drinkers of only a specific type of beverages ro was taken into account in multivariate analyses of risk.
- In studies reporting more than one clinical end point, results on combined (fatal and nonfatal) events and on CHD with respect to other vascular events were used.
- Relative risks were extracted as a measure of the relation between vascular events and wine or beer consumption (whatever the amount consumed in drinkers versus nondrinkers meta-analysis and for each specific consumption category in the dose-response meta-analysis).
- General variance-based method and fitting models were applied to pooled data derived from 26 studies that gave a quantitative estimation of vascular risk associated with either beverage consumption.
- Other sources of heterogeneity in the methodological quality of the studies was taken into account by performing sensitivity analysis, and prespecified subgroups were considered according to type of cohort or event in case group, sex, adjustment for different types of alcoholic beverages or for indicators of social class level, presence of ex-drinkers or light drinkers in the reference group, and use of the same reference group for both wine and beer.

Data Collection Summary:

Timing of Measurements: not applicable

Dependent Variables

- Vascular risk

Independent Variables

- Wine and beer consumption

Control Variables

Description of Actual Data Sample:

Initial N: 30 studies identified in search

Attrition (final N): 26 studies included in meta-analysis

- 13 studies involving 209,418 persons
- 10 studies involving 176,042 persons
- 15 studies involving 208,036 persons

Age: not reported

Ethnicity: not reported

Other relevant demographics

Anthropometrics

Location: international studies

Summary of Results:

Key Findings:

- From 13 studies, the relative risk of vascular disease associated with wine intake was 0.68 (95% CI, 0.59 to 0.77) relative to nondrinkers.
- There was strong evidence from 10 studies to support a J-shaped relationship between different amounts of wine intake and vascular risk.
- A statistically significant inverse association was found up to a daily intake of 150 mL of wine.
- The overall relative risk of moderate beer consumption, which was measured in 15 studies was 0.78 (95% CI, 0.70 to 0.86)
- No significant relationship between different amounts of beer intake and vascular risk was found after meta-analyzing 7 studies.

Author Conclusion:

These findings show evidence of a significant inverse association between light-to-moderate wine

consumption and vascular risk. A similar, although smaller association was also apparent in beer consumption studies. The latter finding, however, is difficult to interpret because no meaningful relationship could be found between different amounts of beer intake and vascular risk.

Reviewer Comments:

No sample size bias could be shown by funnel plot.

Research Design and Implementation Criteria Checklist: Review Articles

Relevance Questions		
1.	Will the answer if true, have a direct bearing on the health of patients?	Yes
2.	Is the outcome or topic something that patients/clients/population groups would care about?	Yes
3.	Is the problem addressed in the review one that is relevant to nutrition or dietetics practice?	Yes
4.	Will the information, if true, require a change in practice?	Yes

Validity Questions		
1.	Was the question for the review clearly focused and appropriate?	Yes
2.	Was the search strategy used to locate relevant studies comprehensive? Were the databases searched and the search termsused described?	Yes
3.	Were explicit methods used to select studies to include in the review? Were inclusion/exclusion criteria specified and appropriate? Were selection methods unbiased?	Yes
4.	Was there an appraisal of the quality and validity of studies included in the review? Were appraisal methods specified, appropriate, and reproducible?	Yes
5.	Were specific treatments/interventions/exposures described? Were treatments similar enough to be combined?	Yes
6.	Was the outcome of interest clearly indicated? Were other potential harms and benefits considered?	Yes
7.	Were processes for data abstraction, synthesis, and analysis described? Were they applied consistently across studies and groups? Was there appropriate use of qualitative and/or quantitative synthesis? Was variation in findings among studies analyzed? Were heterogeneity issued considered? If data from studies were aggregated for meta-analysis, was the procedure described?	Yes
8.	Are the results clearly presented in narrative and/or quantitative terms? If summary statistics are used, are levels of significance and/or confidence intervals included?	Yes

9.	Are conclusions supported by results with biases and limitations taken into consideration? Are limitations of the review identified and discussed?	Yes
10.	Was bias due to the review's funding or sponsorship unlikely?	Yes